

IAPMO/ANSI H1001.1-2021



Standard for
**Quality of Heat Transfer Fluids Used in
Hydronics Systems**



Dedicated to the memory of Les Nelson

American National Standard

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IAPMO/ANSI H1001.1-2021, Standard for Quality of Heat Transfer Fluids Used in Hydronics Systems

Published: September 24, 2021

Published by

International Association of Plumbing and Mechanical Officials (IAPMO)

4755 East Philadelphia Street, Ontario, California, 91761, USA

1-800-854-2766 • 1-909-472-4100

Visit the IAPMO Online Store at: www.IAPMOstore.org

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Printed in the United States of America

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Preface

This is the first edition of IAPMO H1001.1, Quality of Heat Transfer Fluids Used in Hydronics Systems.

This Standard was developed by the IAPMO Hydronics Standard Committee and approved by the IAPMO Hydronics Standard Committee in accordance with the *ANSI Essential Requirements: Due process requirements for American National Standards, and IAPMO Policies and Procedures for Consensus Development of American National* This Standard was approved as an American National Standard on September 24, 2021.

Notes:

- (1) *The use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- (2) *This standard was developed in accordance with the IAPMO procedures accredited as meeting the criteria for American National Standards. The IAPMO Standards Committee that approved this Standard was balanced to assure that individuals from competent and concerned interests had an opportunity to participate. During its development, this Standard was made available for public review, thus providing an opportunity for additional input from industry, academia, regulatory agencies, and the public at large.*
- (3) *This Standard was developed by consensus, which is defined as substantial agreement; consensus implies much more than a simple majority, but not necessarily unanimity. It is consistent with this definition that a member of the relevant IAPMO Standards Committee can be included in the committee roster and yet not be in full agreement with all sections of this Standard.*
- (4) *Although the intended primary application of this Standard is stated in its scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- (5) *The significant portion of the subject matter in this standard can be grouped in the International Classification for Standards (ICS 13.060.99 Water Quality: Other standards related to water quality)*
- (6) *IAPMO Standards are subject to continuous maintenance with review at a maximum of 4 years from the date of approval. Suggestions for their improvement will be referred to the relevant IAPMO Standards Committee. To submit a proposal for change to this Standard, you may send the following information to the International Association of Plumbing and Mechanical Officials, Attention Standards Department, at standards@IAPMOstandards.org or, alternatively, at 4755 East Philadelphia Street, Ontario, California, 91761, and include "Proposal for change" in the subject line:
 - (a) *standard designation (number);*
 - (b) *relevant section, table, or figure number, as applicable;*
 - (c) *wording of the proposed change, tracking the changes between the original and the proposed wording; and*
 - (d) *rationale for the change.**
- (7) *Requests for interpretation should be clear and unambiguous. To submit a request for interpretation of this Standard, you may send the following information to the International Association of Plumbing and Mechanical Officials, Attention Standards Department, at standards@IAPMOstandards.org or, alternatively, at 4755 East Philadelphia Street, Ontario, California, 91761, and include "Request for interpretation" in the subject line:
 - (a) *the edition of the standard for which the interpretation is being requested;*
 - (b) *the definition of the problem, making reference to the specific section and, when appropriate, an illustrative sketch explaining the question;*
 - (c) *an explanation of circumstances surrounding the actual field conditions; and*
 - (d) *the request for interpretation phrased in such a way that a "yes" or "no" answer will address the issue.**
- (8) *Interpretations are processed in accordance with IAPMO's accredited standards development procedures. IAPMO issues written replies to inquiries concerning interpretation of technical aspects of this Standard.*
- (9) *IAPMO accepts responsibility only for those interpretations of this Standard issued in accordance with the accredited IAPMO policies and procedures, which precludes the issuance of interpretations by individuals.*
- (10) *IAPMO does not "approve," "rate," or "endorse" any item, construction, proprietary device, or activity.*

- (11) IAPMO does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this Standard, and does not undertake to insure anyone utilizing this Standard against liability for infringement of any applicable patents, nor assumes any such liability. Users of this Standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their responsibility.*
- (12) Participation by federal or state agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this Standard.*

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IAPMO H1001.1-2021

Standard for Quality of Heat Transfer Fluids Used in Hydronics Systems

1 Scope

1.1 General

This Standard is intended to provide minimum requirements for maintaining quality of liquid aqueous based heat transfer fluids over the life of the system and optimizing the life of system components in both residential and non-residential closed hydronic heating and cooling applications.

This standard does not apply to the following:

- (a) Industrial and process applications, evaporative coolers, open systems, and domestic hot and cold water systems
- (b) Systems with an operating temperature exceeding 212°F (100°C)
- (c) Systems utilizing silicones or hydrocarbon oils as the heat transfer fluid

1.2 Terminology

In this Standard,

- (a) “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy to comply with the Standard.
- (b) “should” is used to express a recommendation, but not a requirement.
- (c) “may” is used to express an option or something permissible within the scope of the Standard; and
- (d) “can” is used to express a possibility or a capability.

Notes accompanying sections of the Standard do not specify requirements or alternative requirements; their purpose is to separate explanatory or informative material from the text. Notes to tables and figures are considered part of the table or figure and can be written as requirements.

1.3 Units of Measurement

Inch/pound units are the primary units of record in global commerce. In this Standard, the SI units are shown in parentheses. The values stated in each measurement system are equivalent in application, but each unit system is to be used independently. All references to gallons are to U.S. gallons.

1.4 Amendments

Proposals for amendments to this Standard will be processed in accordance with the standards-writing procedures of IAPMO.